

1. Management
 - 1.1. Mission Management
 - 1.2. Resources Management
 - 1.2.1. GSFC
 - 1.2.2. Govt. Partner(s)
 - 1.2.3. Non-Govt. Partner(s)
 - 1.2.4. Contractors
 - 1.3. Schedule Management
 - 1.4. Mission Assurance
 - 1.4.1. Safety
 - 1.4.2. Quality Assurance
 - 1.4.3. Product Assurance
 - 1.4.4. Materials/Processes
 - 1.4.5. Software Assurance/IV&V
 - 1.4.6. Reliability Analysis
 - 1.5. Configuration Management
 - 1.6. External Reviews
 - 1.6.1. PDR
 - 1.6.2. CDR
 - 1.6.3. SRR
 - 1.6.4. Other
 - 1.7. Travel
 - 1.7.1. GSFC
 - 1.7.2. Contractors
 - 1.8. Contract and Procurement Management
 - 1.9. Training
 - 1.9.1. GSFC
 - 1.9.2. Contractors
 - 1.10. Logistics
 - 1.10.1. Instrument transportation
 - 1.10.2. Bus transportation
 - 1.10.3. Observatory transport to launch site
 - 1.11. Formulation
 - 1.12. Technology Development
2. Science
 - 2.1. Science Oversight
 - 2.2. PI Science Activities
 - 2.3. Co-I Science Activities
 - 2.4. Instrument Scientists Activities
 - 2.4.1. Instrument Characterization
 - 2.4.2. Instrument Calibration
 - 2.5. Algorithm Development
3. Mission System Engineering
 - 3.1. Systems Engineering Management

- 3.1.1. Systems Engineering Planning
- 3.1.2. Status and Reviews
- 3.2. Systems Design
 - 3.2.1. Requirements Definition
 - 3.2.2. Solution Definition (e.g.Specification Documentation)
- 3.3. Technical Evaluation
 - 3.3.1. Systems Analysis
 - 3.3.1.1. Effectiveness Analysis
 - 3.3.1.2. Trade-off Analysis
 - 3.3.1.3. Risk Analysis
 - 3.3.1.4. Orbital Debris Analysis
 - 3.3.2. Requirements Validation
 - 3.3.3. System Verification
 - 3.3.4. IV&V
- 3.4. Software Systems Engineering
 - 3.4.1. Flight Software
 - 3.4.2. Ground Software
 - 3.4.3. Firmware
- 3.5. Systems Integration & Test
- 3.6. Contamination Control
- 4. Spacecraft
 - 4.1. Spacecraft Management
 - 4.1.1. Resources Management
 - 4.1.2. Schedule Management
 - 4.1.3. Configuration Management
 - 4.1.4. External Reviews
 - 4.1.5. Travel
 - 4.1.6. Contract and Procurement Management
 - 4.2. Spacecraft Systems Engineering
 - 4.2.1. Spacecraft Systems Engineering Management
 - 4.2.1.1. Spacecraft Systems Engineering Planning
 - 4.2.1.2. Status & Reviews
 - 4.2.2. Spacecraft Systems Design
 - 4.2.2.1. Requirements Definition
 - 4.2.2.2. Solution Definition
 - 4.2.3. Spacecraft Technical Evaluation
 - 4.2.3.1. Systems Analysis
 - 4.2.3.2. Requirements Validation
 - 4.2.3.3. Spacecraft Systems Verification
 - 4.2.4. IV&V
 - 4.3. Spacecraft Electrical System
 - 4.3.1. Electronic Parts & Radiation Effects
 - 4.3.2. Electrical Power
 - 4.3.2.1. Solar Array

- 4.3.2.2. Batteries
- 4.3.2.3. Power Electronics
- 4.3.2.4. Power Management & Distribution
- 4.3.3. Command & Data Handling
 - 4.3.3.1. Flight Hardware
 - 4.3.3.2. GSE
- 4.3.4. Communications
- 4.3.5. Electrical System Accommodations
 - 4.3.5.1. Electrical Interfaces
 - 4.3.5.2. EMI/EMC
 - 4.3.5.3. Harness
 - 4.3.5.3.1. Flight hardware
 - 4.3.5.3.2. Wiring Mock-up
 - 4.3.5.4. EGSE
- 4.4. Spacecraft Mechanical System
 - 4.4.1. Structures
 - 4.4.2. Mechanisms
 - 4.4.3. Mission Unique Accommodations
 - 4.4.4. GSE
- 4.5. Spacecraft Thermal Control
 - 4.5.1. Thermal Analysis
 - 4.5.2. Thermal Components
- 4.6. Spacecraft Integration, Test & Verification
 - 4.6.1. System Assembly and Integration
 - 4.6.2. System Test
 - 4.6.2.1. Vibration
 - 4.6.2.2. Acoustics
 - 4.6.2.3. Shock
 - 4.6.2.4. Magnetic calibration/measurements
 - 4.6.2.5. EMI test
 - 4.6.2.6. Mass Properties
 - 4.6.2.7. Thermal Balance
 - 4.6.2.8. Thermal Vacuum
 - 4.6.2.9. Ascent Pressure
 - 4.6.2.10. Comprehensive Performance
 - 4.6.2.10.1. Software comprehensive performance test
 - 4.6.2.11. Functional Tests
 - 4.6.2.11.1. Aliveness Test
 - 4.6.2.11.2. Mission Simulation
 - 4.6.2.11.3. End-to-End Compatibility Test
- 4.7. Spacecraft GN&C
 - 4.7.1. Attitude Control System
 - 4.7.2. Trajectory Design
 - 4.7.3. Navigation

- 4.7.4. Propulsion
- 4.8. Spacecraft Performance Assurance
 - 4.8.1. Reliability Analysis & Safety
 - 4.8.2. Quality Assurance
 - 4.8.3. Materials/Processes
 - 4.8.4. Electronic Parts & Screening
 - 4.8.5. Software Assurance
- 4.9. Spacecraft Flight Software
 - 4.9.1. C&DH FSW (incl. Comm, et al.)
 - 4.9.2. GN&C FSW
 - 4.9.3. Power FSW
 - 4.9.4. FSW Testbeds and Tools
 - 4.9.5. FSW Test and Validation
 - 4.9.6. FSW Support of I&T through IOC
 - 4.9.7. W.Va. IV&V
- 4.10. Spacecraft Ground Software
 - 4.10.1. Development System
 - 4.10.2. W.Va. IV&V
- 4.11. Spacecraft Launch Support
 - 4.11.1. Launch site field support
 - 4.11.2. Remote site support
- 5. Payload
 - 5.1. Payload Management
 - 5.1.1. Resources Management
 - 5.1.2. Schedule Management
 - 5.1.3. Configuration Management
 - 5.1.4. External Reviews
 - 5.1.5. Travel
 - 5.1.6. Contract and Procurement Management
 - 5.2. Payload Systems Engineering
 - 5.2.1. Payload Systems Engineering Management
 - 5.2.1.1. Payload Systems Engineering Planning
 - 5.2.1.2. Status and Reviews
 - 5.2.2. Payload Systems Design
 - 5.2.2.1. Payload Requirements Definition
 - 5.2.2.2. Solution Definition
 - 5.2.3. Payload Technical Evaluation
 - 5.2.3.1. Systems Analysis
 - 5.2.3.2. Requirements Validation
 - 5.2.3.3. System Verification
 - 5.2.4. IV&V
 - 5.3. Payload Integration, Test & Verification
 - 5.3.1. Mechanical
 - 5.3.2. Electrical

- 5.3.3. Optical
- 5.4. Payload Operations
- 5.5. Payload Performance Assurance
 - 5.5.1. Reliability Analysis & Safety
 - 5.5.2. Quality Assurance
 - 5.5.3. Materials/Processes
 - 5.5.4. Electronic Parts & Screening
 - 5.5.5. Software Assurance
- 5.6. Instrument A
 - 5.6.1. Instrument Management
 - 5.6.1.1. Resources Management
 - 5.6.1.2. Schedule Management
 - 5.6.1.3. Configuration Management
 - 5.6.1.4. External Reviews
 - 5.6.1.5. Travel
 - 5.6.1.6. Contract and Procurement Management
 - 5.6.1.7. Logistics
 - 5.6.1.7.1. Instrument transportation
 - 5.6.2. Instrument Systems Engineering
 - 5.6.2.1. Instrument Systems Engineering Management
 - 5.6.2.1.1. Instrument Systems Engineering Planning
 - 5.6.2.1.2. Status and Reviews
 - 5.6.2.2. Instrument Systems Design
 - 5.6.2.2.1. Instrument Requirements Definition
 - 5.6.2.2.2. Solution Definition
 - 5.6.2.3. Instrument Technical Evaluation
 - 5.6.2.3.1. Systems Analysis
 - 5.6.2.3.2. Requirements Validation
 - 5.6.2.3.3. System Verification
 - 5.6.3. Instrument Electrical Systems
 - 5.6.3.1. Instrument Electronic Parts & Radiation Effects
 - 5.6.3.2. Instrument Signal Processing
 - 5.6.3.3. Instrument Electrical Power
 - 5.6.3.4. Instrument Command & Data Handling
 - 5.6.3.5. Instrument Electrical system Accommodations
 - 5.6.3.5.1. Instrument Electrical Interfaces
 - 5.6.3.5.2. Instrument EMI/EMC
 - 5.6.3.5.3. Instrument Harness
 - 5.6.3.5.4. Instrument EGSE
 - 5.6.4. Instrument Mechanical Systems
 - 5.6.4.1. Structures
 - 5.6.4.2. Mechanisms
 - 5.6.4.3. Electro-Mechanical
 - 5.6.4.3.1. Mechanisms

- 5.6.4.3.2. Control Electronics
- 5.6.4.4. Opto-Mechanical
 - 5.6.4.4.1. Optical Components
 - 5.6.4.4.2. Optical Mounts
 - 5.6.4.4.3. Optical Bench
- 5.6.5. Instrument Thermal Systems
 - 5.6.5.1. Thermal Analysis
 - 5.6.5.2. Thermal Components
- 5.6.6. Instrument Integration, Test and Verification
 - 5.6.6.1. Mechanical
 - 5.6.6.2. Electrical
 - 5.6.6.3. Optical
- 5.6.7. Cryogenics
- 5.6.8. Instrument Front End Systems (optical, microwave, etc.)
- 5.6.9. Instrument Detector Systems
- 5.6.10. Instrument Attitude Determination
- 5.6.11. Instrument Orbit Determination
- 5.6.12. Flight Software
 - 5.6.12.1. FSW Developments
 - 5.6.12.2. FSW Test and Validation
 - 5.6.12.3. FSW Testbeds and Tools
 - 5.6.12.4. Firmware Developments
 - 5.6.12.5. IV&V
- 5.6.13. Ground Software
 - 5.6.13.1. Development System
 - 5.6.13.2. IV&V
- 5.6.14. Instrument Manufacturing
 - 5.6.14.1. Mechanical
 - 5.6.14.2. Electrical
 - 5.6.14.2.1. Harness
 - 5.6.14.2.1.1. Flight
 - 5.6.14.2.1.2. Test
 - 5.6.14.3. Optical
- 5.6.15. GSE
- 5.6.16. Contamination
- 5.7. Instrument B
 - 5.7.1. Instrument Management
 - 5.7.1.1. Resources Management
 - 5.7.1.2. Schedule Management
 - 5.7.1.3. Configuration Management
 - 5.7.1.4. External Reviews
 - 5.7.1.5. Travel
 - 5.7.1.6. Contract and Procurement Management
 - 5.7.1.7. Logistics

- 5.7.1.7.1. Instrument transportation
- 5.7.2. Instrument Systems Engineering
 - 5.7.2.1. Instrument Systems Engineering Management
 - 5.7.2.1.1. Instrument Systems Engineering Planning
 - 5.7.2.1.2. Status and Reviews
 - 5.7.2.2. Instrument Systems Design
 - 5.7.2.2.1. Instrument Requirements Definition
 - 5.7.2.2.2. Solution Definition
 - 5.7.2.3. Instrument Technical Evaluation
 - 5.7.2.3.1. Systems Analysis
 - 5.7.2.3.2. Requirements Validation
 - 5.7.2.3.3. System Verification
- 5.7.3. Instrument Electrical Systems
 - 5.7.3.1. Instrument Electronic Parts & Radiation Effects
 - 5.7.3.2. Instrument Signal Processing
 - 5.7.3.3. Instrument Electrical Power
 - 5.7.3.4. Instrument Command & Data Handling
 - 5.7.3.5. Instrument Electrical system Accommodations
 - 5.7.3.5.1. Instrument Electrical Interfaces
 - 5.7.3.5.2. Instrument EMI/EMC
 - 5.7.3.5.3. Instrument Harness
 - 5.7.3.5.4. Instrument EGSE
- 5.7.4. Instrument Mechanical Systems
 - 5.7.4.1. Structures
 - 5.7.4.2. Mechanisms
 - 5.7.4.3. Electro-Mechanical
 - 5.7.4.3.1. Mechanisms
 - 5.7.4.3.2. Control Electronics
 - 5.7.4.4. Opto-Mechanical
 - 5.7.4.4.1. Optical Components
 - 5.7.4.4.2. Optical Mounts
 - 5.7.4.4.3. Optical Bench
- 5.7.5. Instrument Thermal Systems
 - 5.7.5.1. Thermal Analysis
 - 5.7.5.2. Thermal Components
- 5.7.6. Instrument Integration, Test and Verification
 - 5.7.6.1. Mechanical
 - 5.7.6.2. Electrical
 - 5.7.6.3. Optical
- 5.7.7. Cryogenics
- 5.7.8. Instrument Front End Systems (optical, microwave, etc.)
- 5.7.9. Instrument Detector Systems
- 5.7.10. Instrument Attitude Determination
- 5.7.11. Instrument Orbit Determination

- 5.7.12. Flight Software
 - 5.7.12.1. FSW Developments
 - 5.7.12.2. FSW Test and Validation
 - 5.7.12.3. FSW Testbeds and Tools
 - 5.7.12.4. Firmware Developments
 - 5.7.12.5. IV&V
- 5.7.13. Ground Software
 - 5.7.13.1. Development System
 - 5.7.13.2. IV&V
- 5.7.14. Instrument Manufacturing
 - 5.7.14.1. Mechanical
 - 5.7.14.2. Electrical
 - 5.7.14.2.1. Harness
 - 5.7.14.2.1.1. Flight
 - 5.7.14.2.1.2. Test
 - 5.7.14.3. Optical
- 5.7.15. GSE
- 5.7.16. Contamination
- 6. Ground Systems Development
 - 6.1. Management
 - 6.2. Systems Engineering
 - 6.2.1. Systems Engineering Management
 - 6.2.1.1. Systems Engineering Planning
 - 6.2.1.2. Status and Reviews
 - 6.2.2. Ground System Design
 - 6.2.2.1. Requirements Definition
 - 6.2.2.2. Solution Definition
 - 6.2.3. Ground System Technical Evaluation
 - 6.2.3.1. Systems Analysis
 - 6.2.3.2. Requirements Validation
 - 6.2.3.3. System Verification
 - 6.2.3.4. IV&V
 - 6.2.4. Ground Software Systems Engineering
 - 6.3. Product Assurance
 - 6.4. Quality Assurance
 - 6.5. Integration, Test and Verification
 - 6.6. Mission Operations Center
 - 6.7. Science/Data Operations Center
 - 6.7.1. Science Data Processing
 - 6.7.2. Science Data Validation
 - 6.8. Data Distribution and Archival
 - 6.9. Ground Station
 - 6.10. Communications Network
 - 6.11. Flight Dynamics

- 6.12. Testbeds for Ground Systems Test and FOT Training
- 7. Launch Vehicle
 - 7.1. Spacecraft to LV Interface Definition and Verification
 - 7.2. Launch site field support
- 8. Operations
 - 8.1. Mission Operations
 - 8.1.1. Systems Engineering
 - 8.1.2. Sustaining Engineering
 - 8.1.3. Operations
 - 8.2. Science Operations
 - 8.2.1. Science Planning & Analysis
 - 8.2.2. Science Data Processing
 - 8.2.3. Data Distribution and Archival
 - 8.2.4. Science Investigators
 - 8.2.5. Guest Investigator Program
 - 8.3. Ground Station
 - 8.3.1. Systems Engineering
 - 8.3.2. Sustaining Engineering
 - 8.3.3. Quality Assurance
 - 8.3.4. Operations
 - 8.4. Communications
 - 8.4.1. Systems Engineering
 - 8.4.2. Sustaining Engineering
 - 8.4.3. Quality Assurance
 - 8.4.4. Operations
 - 8.5. Flight Software Sustaining Engineering
 - 8.5.1. Spacecraft and Components Flight Software Systems
 - 8.5.2. Instrument Flight Software Systems
 - 8.6. Ground Software Sustaining Engineering
 - 8.7. Operations Services
 - 8.7.1. Tracking Network
 - 8.7.2. Flight Dynamics
 - 8.7.3. Other
- 9. Education & Public Outreach